a fine series of skulls of *Ursus spelæus* from the Belgian caves contained in the Museum at Brussels.—Mr. Whitaker describes the chalk of the cliffs from Seaford to Eastbourne in Sussex, which he illustrates by a section, and compares with that of the Kentish cliffs.—In a paper (illustrated with a map) on the Denudation of the Coalbrook Dale coal-field, Mr. Daniel Jones endeavours to explain the puzzling arrangement of the coal measures in that locality by demonstrating that the southern portion of it has been largely denuded, and subsequently overlain by coal measures of younger age, so that the deposits are not uniform and persistent.—Mr. W. Davies gives us an alphabetical catalogue of type specimens of fossil fishes in the British Museum, in continuation of the similar lists already published by Sir Philip Egerton and Lord Enniskillen of the type specimens in their collections.—The remainder of this number is occupied as usual by notices, reviews, reports and correspondence.

THE *Proceedings of the Royal Irish Academy*, Series II. No. 2 of vol. i. has just been presented to the members. This Part contains Mr. Andrews's notice of the capture of *Ziphius Sowerbi*. The President's Annual Address. W. Archer "On some new or little-known Freshwater Rhizopods (Plates 12 and 13). Mr. R. C. Tichborne, Laboratory notes. G. J. Stoney "On the Cause of the Interrupted Spectra of Gases." Prof. R. Ball "On the Motion of Vortex Rings in Air." C. E. Burton "On Results obtained by the *Agosta* Expedition to observe the Recent Solar Eclipse." Principal Dawson, Note on *Eozöon Canadense*. Prof. T. S. Hunt, Notes on Messrs. King and Rowney on *Eozöon Canadense*. Prof. Macalister, "On Human Muscular Anomalies." The Appendix contains the minutes of the Proceedings of the Academy, and the Correspondence relative to the Bombardment of Paris.

IN the *Journal of Botany* for May, Mr. C. E. Broome describes a new British fungus *Scleroderma Geaster*, with a lithograph. The contributions to local botany are a continuation of Mr. More's Supplement to the "Flora Vectensis," and Notes of plants of the neighbourhood of Oxford, by Prof. Thistleton-Dyer. We have also a further instalment of Dr. Hance's "Sertulum Chinense," and the usual short notes, reports, reviews, and proceedings of societies.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, May 16.—Prof. Flower in the chair.—The Secretary read a report on the additions that had been made to the society's menagerie during the month of April 1871; and called particular attention to a female of the lately-described Prince Alfred's deer (*Cervus alfredi*), which had been received in exchange, and was stated to have been originally brought from the Philippines.—An extract was read from a letter addressed to the secretary by Dr. R. A. Philippi, Director of the National Museum at Santiago, stating that no species of the tortoise was known to occur in Chili, and that the specimens upon which the so-called *Testudo chilensis* had been based had been received from Mendoza, in the Argentine Republic.—Prof. T. H. Huxley communicated a paper by Dr. P. Martin-Duncan, F.R.S, containing descriptions of the Madreporaria (stony corals) dredged up during the expedition of H.M.S. *Porcupine* in 1869-1870.—Sir Victor Brooke, Bart., F.Z.S., read a paper on Speke's Antelope (*Tragelaphus spekii*) and the allied species of the genus *Tragelaphus*, in which the distinguishing characters of these animals were pointed out, and their synonymy and distribution given.—Mr. P. L. Sclater communicated some notes on a collection of birds made in the vicinity of Lima, Peru, by Prof. W. Nation, of that place, with notes on their habits by the collector.—A second communication from Mr. Sclater contained a continuation of his notes on rare or little-known animals now or lately living in the society's gardens. Mr. Sclater also gave the description of a new parrot, now living in the society's gardens, which he proposed to call *Lorius tibialis*.—Mr. R. B. Sharpe read a note on *Macheirhamphus anderssoni*, a very rare Accipitrine bird from Damara Land, and gave a history of the two species of *Macheirhamphus* now known to science.—Mr. J. Gould exhibited and pointed out the characters of a new humming bird, lately discovered by Mr. H. Whitely in Peru, which he proposed to call *Helianthea osculans*; and likewise characterised five other new species of the same family of birds.

Geological Society, May 10.—Prof. Morris, vice-president, in the chair. Dr. Henry Nyst, of Brussels, was elected a foreign member, and Prof. G. Dewalque, of Liège, a foreign correspondent of the Society. The following communications were read:—1. On the Ancient Rocks of the St. David's Promontory, South Wales, and their Fossil contents, by Prof. R. Harkness, F.R.S., and Mr. Henry Hicks. In the Promontory of St. David's the rocks upon which the conglomerates and purple and greenish sandstone, forming the series usually called the "Longmynd" and "Harlech Groups," repose, are highly quartziferous, and in many spots so nearly resemble syenite that it is at first difficult to make out their true nature. The apparent crystals are, however, for the most part angular fragments of quartz, not possessing the true crystalline form of the mineral. The matrix does not exhibit a crystalline arrangement, and contains a very large proportion of silica, much exceeding that which is obtained from rocks of a syenitic nature. These quartziferous rocks form an E.N.E and W.S.W. course. The arrangement of these rocks, which seem to be quartziferous breccias, is somewhat indistinct. In the immediate neighbourhood of St. David's they have associated with them irregular bands of hard, greenish, ashy-looking shales, much altered in character, but often presenting distinct traces of foliation. In a ridge running from the S.E. of Ramsey Sound in a north-easterly direction, the greenish shales are more compact, and resemble earthy greenstones. The quartziferous breccias and their associated shales form two anticlinal axes, contiguous to each other, and have on their S.S.E. and N.N.W. sides purple and green rocks. The order of the rocks from the quartziferous breccias upwards, when not disturbed by faults, is as follows:—

Lower Cambrian.

		feet.
1.	Greenish hornstones on the S.E., and earthy Greenstones on the N.W., forming the outermost portions of the so-called Syenitic and Greenstone ridges.	
2.	Conglomerates composed chiefly of well-rounded masses of quartz imbedded in a purple matrix	60
3.	Greenish flaggy sandstones	460
4.	Red flaggy or shaly beds, affording the earliest traces of organic remains in the St. David's Promontory, namely, *Lingulella ferruginea* and *Leperditia cambrensis*	50
5.	Purple (sometimes greenish) sandstones	1000
6.	Yellowish-grey sandstones, shales, and flags containing the genera *Plutonia*, *Conocoryphe*, *Microdiscus*, *Agnostus*, *Theca*, *Protospongia*	150
7.	Grey, purple, and red flaggy sandstones, containing, with some of the above-mentioned genera, the genus *Paradoxides*	1500
8.	Grey flaggy beds	150
9.	The true beds of the "Menevian Group," richly fossiliferous, and the probable equivalents of the lowest portions of the Primordial Zone of M. Barrande	550

The discovery of a fauna specially rich in trilobites, among these rocks of the St. David's Promontory, affords very important information concerning the earlier forms of life of the British Isles. Until the discovery of this fauna, these rocks and their equivalents in North Wales were looked upon as all but barren of fossils. We have now, scattered through about 3000 feet of purple and green strata, a well-marked series of fossils, such as have nowhere else been obtained in the British Isles. In the Longmynds of Shropshire the only evidence of the existence of life during the period of their deposition is in the form of worm-burrows, and in the somewhat indistinct impressions, which Mr. Salter regards as trilobitic, and to which he has given the name of *Palæopyge Ramsayi*. If we assume the purple and green shales and sandstones, with their associated quartz rocks of Bray Head and the drab shales of Carrick M'Reily, county Wicklow, to represent the old rocks of St. David's, they afford only very meagre evidence of the occurrence of life during the period of their deposition in the form of worm-burrows and tracks, and in the very indeterminate fossils which have been referred to the genus *Oldhamia*. One very prominent feature about the palæontology of the ancient rocks of St. David's is the occurrence of four distinct species of the genus *Paradoxides*; and this is in strong contrast with the entire absence of the genus *Olenus*. On a comparison of the palæontology of the St. David's rocks with those of the continent of Europe and of America, which seem to occupy nearly the same horizon, we have like features to a very great extent presenting themselves. With reference to the distribution in time of some of the earlier genera of trilobites, it would appear that the genus *Olenus* is represented in Britain and Europe by twenty-two species, confined to the Lingula-flags and Tremadoc rocks, and not occurring so low as the Menevian group. The absence of this genus from the Menevian group, and its occurrence throughout the whole of the Lingula-flags, and in the Tremadoc rocks, along with the fact that so far as present observations go, no species of *Paradoxides* ranges higher than the Menevian group, have afforded good palæontological grounds for placing the line of demarcation between Upper and Lower Cambrian at this spot, and for including the Menevian group in the Lower Cambrian, to the bulk of which it is intimately united palæontologically. Mr. Hughes bore testimony to the admirable work done by Mr. Hicks, who had, almost unaided, worked out the geology of that district. Allowing that many subdivisions and new specific names had with great advantage been introduced into petrology, he defended the Survey nomenclature by reference to the then received definition of syenite and greenstone, terms still perfectly understood and applicable to the main mass of the rocks in question, though possibly subsequent closer examination and new sections may have rendered some modification of the boundary lines desirable. He was prepared to allow the metamorphic origin of all rocks of the classes under consideration, but did not think there was sufficient evidence to show that the divisional planes in the syenite and greenstones of St. David's were due to original stratification, but might correspond rather to the great joints of most granites. Mr. Hughes pointed out that the conglomerate contained fragments of the hornstone and quartz of this older series, which he considered was probably part of an old ridge or shoal, possibly of Laurentian, but certainly of Pre-Cambrian age, and thought that there were slight differences in the lithological character of the beds on either side, such as might be explained on this supposition. He agreed with Prof. Ramsay in thinking that there was evidence of the proximity of land in early Cambrian times, but was not prepared to refer these red rocks to inland seas or lakes as opposed to open sea; the whole seemed rather the deposit of an open sea encroaching during submergence. He did not attach very much importance to the restriction of genera to limited horizons in these older rocks of St. David's. For, as it was reserved for Dr. Hicks to discover these fossils after so many other observers had examined the district, he anticipated that further researches must certainly result in finding links which will connect together more closely beds, the stratigraphical relations of which seem to indicate so clearly an unbroken though varying series. Mr. Gwyn Jeffreys had been struck by the intercalation of non-fossiliferous beds from time to time among the fossiliferous beds described in the paper. This was the case in beds now in course of formation, and appeared to arise from the great deposits of mud brought down by rivers and redeposited in certain positions in the sea-bed. That this was the case had been proved by recent dredging operations both in the Atlantic, off Spain, and in the Mediterranean. Mr. Boyd Dawkins called attention to the gap which had been filled by the discoveries recorded in the paper, inasmuch as the Molluscan, Annelid, and Crustacean forms were now carried back far into the Cambrian period, and yet without any trace of their convergence, so that the origin of life might be as far removed from that period as was the Cambrian from the present time. The difference in the colours of the rocks he was inclined to refer to the different degrees of oxidisation of the iron they contained, which might supervene in a comparatively short time. The Rev. W. S. Symonds had, in visiting the spot, been much struck by the rocks, at that time termed syenite, which he believed might be an extension of those on the Carnarvonshire peninsula, and which he thought supported the whole series of the Cambrian rocks, so that they might after all be the Laurentian, the same as those of Sutherlandshire and Assynt. If this were the case the nomenclature of the Geological Survey would have to be altered, and the rocks of Pistyl and Holyhead no longer termed metamorphosed Cambrian rocks, but Laurentian. Mr. Hicks, in reply, stated that the quartziferous breccias forming the central ridge contained so many rolled pebbles, and were, moreover, in places so distinctly bedded, that there could be no doubt of their being sedimentary. Other beds, described as greenstone in the maps of the Geological Survey, were also distinctly laminated. The non-occurrence of fossils in the more sandy beds he attributed to their having been deposited in very shallow water. The fossils occurred principally in fine-grained beds of a flaggy nature. 2 "On the Age of the Nubian Sandstone," by Mr. Ralph Tate, F.G.S. The author remarked that the sandstone strata underlying the Cretaceous limestones, and resting upon the granitic and schistose rocks of Sinai, had been identified with the "Nubian Sandstone" described by Russegger as occurring in Egypt, Nubia, and Arabia Petræa. In the absence of palæontological evidence, this sandstone has been referred to the Mesozoic group, having been regarded by Russegger as Lower Cretaceous, and by Mr. Bauerman and Figari-Bey as Triassic, the latter considering an intercalated limestone-bed to be the equivalent of the Muschelkalk. The author has detected *Orthis Michelini* in a block of this limestone from Wady-Nasb, which leads him to refer it to the Carboniferous epoch, as had already been done by the late Mr. Salter from his interpretation of certain encrinite-stems obtained from it. The author mentioned other fossils obtained from this limestone, and also referred to the species of *Lepidodendron* and *Sigillaria* derived from the sandstone of the same locality. He regarded the Adigrat Sandstone of Mr. Blanford as identical with the Nubian Sandstone.—3. "On the Discovery of the Glutton (*Gulo luscus*) in Britain," by Mr. W. Boyd Dawkins, M.A., F.R.S. The author in this paper described a lower jaw of the Glutton, which had been obtained by Messrs. Hughes and Heaton from a cave at Plâs Heaton, where it was associated with remains of the wolf, bison, reindeer, horse, and cave-bear. He remarked that he could detect no specific difference between the *Gulo spelæus* Goldfuss, from Germany, and the living *Gulo luscus*, except that the fossil Carnivore was larger than the living, probably from the comparative leniency of the competition for life in postglacial times. He referred to the distribution of the Glutton in a fossil state, and argued that its association with the reindeer, the marmot, and the musk-sheep would imply that the postglacial winters were of Arctic severity, whilst the presence of remains of the hippopotamus, associated with the same group of animals, would indicate a hot summer, such as prevails on the Lower Volga. Mr. Hughes indicated the exact position in which the jaw of the glutton was found, but pointed out that, owing to the excavations of keepers, badgers, rabbits, &c., the earth was so much disturbed in that part that it was impossible to be sure of the original relative position of the bones. He showed that the Plâs Heaton Cave was on a hill rising from the top of the plateau, while the Cefn, Brysgill, and Galltfænan Caves were in the gorge cut through that plateau, and therefore that the Plâs Heaton Cave was probably formed, and might possibly have been first occupied, at a much earlier period than the others. As it appeared to pass under that part of the hill which is overlapped by heavy drift, he thought it quite possible that this may have been a preglacial cave, and that by and by we may find evidence of preglacial fauna in it. The Rev. W. S. Symonds mentioned that in some of the pot holes in the roof of the Cefn Cave he had procured silt containing remains of shells determined by Mr. Jeffreys to be marine. Mr. Hughes explained that these shells had probably been washed in from the superficial drift of the district. Mr. Dawkins, in reply, expressed his belief that though the excavation of the caves in question might have taken place at different periods, yet that their occupation was, geologically speaking, contemporaneous.

Mathematical Society, May 11.—Mr. W. Spottiswoode, president, in the chair. Mr. C. J. Monro, B.A., late Fellow of Trinity College, Cambridge, was elected a member; and Mr. J. Griffiths, M.A., Fellow of Jesus College, Oxford, was proposed for election. The Hon. J. W. Strutt, fellow of Trinity College, Cambridge, was admitted into the Society. Prof. Henrici indicated the method of treatment he had employed in his paper "On the Singularities of the Envelopes of a non-unicursal Series of Curves." Mr. Strutt then read his paper "On the Resultant of a large Number of Vibrations of irregular phase, as applied to the explanation of Coronas." Sir W. Thomson, Prof. Clerk Maxwell, and Mr. Strutt made some further remarks on the subject of the paper. Mr. Maxwell then gave a description of two solar halos he had recently seen, and Prof. W. G. Adams gave some additional particulars in the case of one of the phenomena which had also been noticed by himself. Prof. Cayley then communicated an account of a paper by Mr. J. Griffiths "On the problem of finding the circle which cuts three given circles at given angles." The president next requested assistance in the solution of a "Question on the Mathematical Theory of Vibrating Strings," which he had been unsuccessful in solving. Mr. Strutt mentioned some results he had arrived at in reference to the subject of inquiry. A communication from Prof. Cayley respecting the extension of the Society's sphere of action was laid before the meeting by the president; it was determined that the matter should be discussed at the Society's next meeting. Prof. Maxwell asked for information as to the convention established among mathematicians with respect to the relation between the positive direction of motion along any axis, and the positive direction of rotation round it. In Sir W. Hamilton's Lectures on Quaternions the coordinate axes are drawn, x to South, y to West, and z upwards. The same system is adopted in Prof. Tait's Quaternions, and in Listing's Vorstudien zur Topologie. The positive directions of translation and of rotation are thus connected as in a left-handed screw or the tendril of the hop. On the other hand, in Thomson and Tait's "Natural Philosophy," p. 234, the relations are defined with reference to a watch, and lead to the opposite system, symbolised by an ordinary or right-handed screw, or the tendril of the vine. If the actual rotation of the earth from west to east be taken positive, the direction of the earth's axis from south to north is positive in this system. In pure mathematics little inconvenience is felt from this want of uniformity, but in astronomy, electro-magnetics, and all physical sciences, it is of the greatest importance that one or the other system should be specified and persevered in. The relation between the one system and the other is the same as that between an object and its reflected image, and the operation of passing from one to the other has been called by Listing *Perversion.* Sir W. Thomson and Dr. Hirst stated the arguments in favour of the right-handed system, derived from the motion of the earth and planets, and the convention that north is to be reckoned positive. The right-handed system, symbolised by a corkscrew or the tendril of the vine, was adopted by the society.

HALIFAX, NOVA SCOTIA

Institute of Natural Science, March 13.—Mr. J. M. Jones, F.L.S., president, in the chair. D. J. B. Gilpin read a paper on the Mammalia of Nova Scotia, being the ninth part of a series on that subject delivered before the institute. The present paper included the common hare (*Lepus americanus*) and the cariboo (*Rangifer cariboo*) or reindeer of the province. The author stated that whilst Newfoundland and the country around Hudson's Bay were represented by the polar hare (*L. glacialis*) which varied in colour even to pure white, and New England on the south by the wood hare (*L. sylvestris*) which never varied, Nova Scotia had the American hare (*L. americanus*) which varied to a soiled rusty-white, and which had been confounded with both the other species. A specimen of this last species taken early in November, and which might be considered as in summer pelage, was sepia-brown with a yellow wash and coarse black hairs on the back, breast, belly, and inside the legs white, tips of ears black, and pads light rusty. One taken in December of the same year and which may be taken as a winter specimen, was soiled white with rusty streaks on the back and sides; nose and circlet around the eyes rusty; under parts, pure white; a rusty streak on fore arm always, and often upon the thigh. The only parts which remained unchanged were the white of the belly, the black ear tips and the rusty pads, and that all the hair, both, summer and winter, had a lead coloured base. The change of colour takes place during the month of December, and is the result of the summer coat being shed and replaced by the winter one. The American hare abounds in the province, keeps close covert, and is nocturnal. In concluding his remarks upon this the last of the list of rodents found in Nova Scotia, Dr. Gilpin stated that although the equator produced no arctic forms, yet we find equatorial forms side by side with boreal ones at the north; and that although the furry foot of the lynx and ermine, and the feathery one of the day owl, the winter falcon, the ptarmigan, and grouse, are the true livery of the north, yet the shrews with satin coats and naked needle-like legs brave cold 20° below zero, and the red squirrel sports with naked palms on snow of similar temperature. Passing by the three orders *Edentata*, *Solidungula*, and *Pachydermata*, one of which, Solidungula, was represented by the horse, an introduced species on Sable Island, and there allowed to assume the feral state, the author arrived at the *Ruminantia*, two genera of which only exist in Nova Scotia—the cariboo or reindeer (*Rangifer cariboo*) and the moose (*Alces americanus*). He stated that the cariboo attain in Nova Scotias the enormous height of four feet ten inches; that the horns differs in every individual, but agrees in certain typical marks. In summer they are in colour rich brown, with white necks and shoulders; in winter, all soiled white; legs brownish, with white fringe on he hoofs extending to the back hoofs. They are seen in droves of seven or eight usually, and now and then of a hundred, but are fast diminishing; not, however, by the hand of man or teeth of wild beasts, but in that noiseless way wild creatures disappear as their range is contracted by new settlements; the does producing fewer fawns, and the males becoming early barren. Nova Scotia is the most southern latitude in which the cariboo is found on the American continent, but there is a "permanent variety," according to Richardson, one third the size of the southern form, with larger horns and no gall bladder, inhabiting the polar region. The President read a paper on the Diurnal Lepidoptera of Nova Scotia, being the second part of a series in process of delivery before the Institute. He remarked how visibly insect faunas differed according to the geological and botanical character of the districts visited by the entomologist, and more particularly alluded to the smaller size of certain insects inhabiting the extreme north-eastern portions of the American continent, compared with individuals of the same species taken farther south. This fact was first brought to his notice by the Rev. C. J. S. Bethune, secretary of the Entomological Society of Canada, three years ago, who while identifying a small collection of *Heterocera* taken in Nova Scotia, observed the smaller size of Nova Scotian forms when compared with those of Western Canada. Since that date the author has compared species of other orders with British types, and found a similar peculiarity, the British being larger than the Nova Scotian. This specific change is probably owing to the difference existing in the botanical character of these separate districts, which is not far removed from each other; but he hopes to be able to pay a second and longer visit to the valley of Annapolis and the slopes of the North Mountain during the coming summer.

VIENNA

Imperial Academy of Sciences, March 9.—Several memoirs were communicated, of which the titles only are given, namely, "On the conversion of formic acid into methylic alcohol," by MM. A. Lieben and A. Rossi, of Turin; "On the structure and development of the earliest plumage observed in the chicken," by Dr. E. Pernitza; "On the solution of algebraic equations of any degrees, even with complex co-efficients, by means of Gauss's scheme for complex magnitudes," by M. A. Raabe; and "On the heat equilibrium between polyatomic gaseous molecules," by Prof. L. Boltzmann. Two sealed papers were also deposited.—Dr. L. Fitzinger presented the sixth section of his critical revision of the family of the Bats (*Vespertiliones*), embracing the genera *Vespertilio* and *Myotis*.—Prof. R. Maly communicated the results of some investigations made in the chemical laboratory of the medical faculty at Innsbruck, including an analysis of the fluid from an ovarian cyst, made by himself, with investigations of the constituents of its ash, by Prof. E. Hofmann; a notice of Trommer's sugar-reaction in the urine, and of a simple mode of preparing muriate of creatinine from that fluid, by himself; and researches upon the bodies containing sulphur in the urine, by Dr. W. Löbisch.—Prof. von Hochstetter communicated some microscopic investigations on opals, by Dr. H. Behrens, in which the author states that most opals are mixtures of various minerals, including a colourless fundamental mass, containing (microscopically discoverable) hydrophane, cacholong, quartz, hydrated and anhydrous oxide of iron, ferriferous silicates, metallic sulphurets and carbonates, and organic substances:—fire-opal, glass-opal, noble-opal, and hyalite are free from admixture, and the first two are structureless. The colours of the noble-opal are interference-colours, caused by their lamellæ, which, however, are not tabular crystals. The double refraction discovered by Schultze in hyalite is caused by differences of elasticity such as occur in dextrin, amber, and compressed glass. The author also noticed the spheroidal structure which frequently occurs in opals.—A memoir on the circum-anal glands of man, by Dr. Gay, of Kasan, was presented by Prof. Brücke. The author describes these glands as having the greatest similarity to the large sudorific glands of the axillary cavity.—Dr. Tschermak presented three memoirs, namely, an analysis of the meteoric iron from the desert of Atacama, by Prof. E. Ludwig, as a further demonstration of its similarity to the meteoric iron of Jewell Hill; a notice of the microscopic constitution of the Lavas of Aden, by M. J. Niedzwiedski, who distinguished three species of rocks:—an obsidian containing sanidine, a trachytic lava containing plagioclase and algite, and a felspathic basalt; and a contribution of his own to the knowledge of salt-deposits, in which he refers especially to the deposit at Stassfurt, which consists of two stages (rock-salt and kieserite-carmallite), the upper of which appears to be wanting in other salt-deposits. The author notices the minerals sylvine, and kainite, which occur scattered in this upper stage at Stassfurt, and mentions their occurrence in the salt-deposit at Kalusy, in Galicia, and partially at Hallstadt, as indications of the upper stages. He also notices the crystalline forms of the kainite and sylvine of Kalusy, and of the kieserite of Hallstadt.—Prof. L. Ditscheiner presented a memoir on some new Talbotian phenomena of interference, describing the phenomena manifested in the spectrum when the object-glass of the telescope is half-covered with crystalline plates of various thickness, whilst two Nicol's prisms are placed before the fissure and before the eye-glass.—The same gentleman also communicated a paper on a simple apparatus for the production of complementary pairs of colours with Brücke's schistoscope, and a notice supplementary to his determinations of wave-lengths, published some years ago.—M. Franz presented a memoir on the theory of simultaneous substitutions in double and triple integrals; and M. Oskar Simony noticed three mathematical problems, one belonging to the integral calculus and the two others to algebraic analysis.—Prof. A. Bauer presented a memoir on some compounds of lead with other metals, in which he showed that lead combines both with palladium and with mercury to form definite chemical compounds, having the formulæ $Pd^3 Pb$ and Hg^3Pb^2. The same gentleman communicated a paper by M. J. Stingl, an analysis of rocks and spring deposits of the Teplitz thermal district.

PARIS

Academie des Sciences, Morales et Politiques, April 29.—The French Institute is divided into five branches, of which the Académie des Sciences is considered the senior. All the branches meet in the same hall on different days of the week; the meetings of the Académie des Sciences take place on the Monday, and those of the Académie des Sciences Morales on the Saturday; the other sittings are not public, and the three other sections do not issue a special periodical, although they keep regular records. The Académie des Sciences Morales was not less determined than its elder brother to maintain its sittings, and they were not interrupted up to April 29. But the number of the members, which had been five for the sittings of the 15th and the 22nd, had diminished again to only three, which is the smallest for making a quorum. The presidency was given to M. Naudet, the senior member by age, who is close to his 88th year. The Académie des Sciences Morales et Politiques, which had been suppressed by Napoleon I. as being tainted with "ideology," was restored by Louis Philippe after the revolution of 1830, and M. Naudet is one of the original members, and was during many years perpetual secretary, resigning five years ago as being unable to fulfil the duties of his post. M. Leveque, one of the younger members, acted as perpetual secretary, and read over a short account of the proceedings of the last sitting. M. Pellat, the only third member present, sat on the benches, and held up his hand to approve the record. Then the reading of memoirs was proceeded with. A member of the Académie des Beaux Arts, whose name is not given to us, availed himself of the privilege granted to the academicians of every section, and took his seat by his colleague Pellat. The general public was represented by three persons. One of them was M. Mangin, a literary gentleman attached for years to the editorial staff of the *Patrie*. The *Journal Officiel* of the Commune took no notice of the proceedings, which were reported in the Versailles *Officiel*. It is very likely that the Académie des Sciences Morales et Politiques will be extinguished for the time by the Communist rule, and there is only a faint hope that the Académie des Sciences itself will be able to find the three members required for a quorum. But some academicians propose to advise the five academies to hold a general sitting every week, so that the chance may be increased.

BOOKS RECEIVED

ENGLISH.—The Sub-Tropical Garden: W. Robinson (Murray).—Horses: their National Treatment, &c., by Amateur (Ballière, Tindall, and Cox).—The Builders of Babel: D. McCausland (R. Bentley).—The Meteoric Theory of Saturn's Rings: A. M. Davies (Longmans).—The Physiological Anatomy and Physiology of Man, vol. i. pt. 2: Todd, Bowman, and Beale (Longmans).

PAMPHLETS RECEIVED

ENGLISH.—Report of the Observing Astronomical Society, Bristol.—Brown on the Throne.—Biology *v.* Theology, No. 2, by Julian.—Transactions of the Society of Engineers of Scotland.—Memoirs of the Geological Survey of Ireland, Nos. 104, 113, by G. H. Kinahan.—Report of the Rugby School Natural History Society for 1870.—First Annual Report of the Natural History Society of Derry—A First Catechism of Botany, by John Gibbs.—On the Physics of Arctic Ice, by R. Brown.—Descriptions of some New Oaks, by R. Brown.—On Double Spectra, by W. M. Watts—Proceedings of the Bath Natural History Field Club, vol. ii., No. 2—The Gold Fields of Nova Scotia, by A. Heatherington.—Report of the Palestine Exploration Fund.—Science and Revelation, by R. P. Smith.—Materialistic Theories, by the Archbishop of York.—Transactions of the Clifton College Scientific Society.—Address delivered at the Anniversary Meeting of the Geological Society, by J. Prestwich.—On the Physiology and Pathology of the Lower Animals, by Dr. Lauder Lindsay.—The Historical Difficulties of the Old and New Testament, by Rev. G. Rawlinson.—Positivism: a Lecture by Rev. W. Jackson.—Transactions of the Scottish Arboricultural Society for 1870.

AMERICAN AND COLONIAL.—Third Annual Report of the Noxious and Beneficial Insects of the State of Missouri, by C. V. Riley.—Report of the Fruit-Growers' Association of Ontario.—On the Solar Corona, by Prof C. A. Young.—On a Method of Fixing Photography, and Exhibiting the Magnetic Spectra, by Dr. A. M. Mayer.

FOREIGN.—Plaidoyer en faveur de Paris: W. de Fonvielle.

DIARY

THURSDAY, MAY 25.

ROYAL SOCIETY, at 8.30.—On the Temperature of the Earth as Indicated by Observations made during the Construction of the great Tunnel through the Alps: D. T. Ansted, F.R.S—Some Remarks on the Mechanism of Respiration: F. Le Gros Clark.—On a New Instrument for Recording Minute Variations of Atmospheric Pressure: W. Whitehouse.—Note on the Spectrum of Uranus, and of Comet I., 1871: W. Huggins, F.R.S.

SOCIETY OF ANTIQUARIES, at 8.30.—Ballot for the Election of Fellows.

ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall, F.R.S.

FRIDAY, MAY 26.

QUEKETT MICROSCOPICAL CLUB, at 8.

ROYAL INSTITUTION, at 9.—On Bishop Berkeley and the Metaphysics of Sensation: Prof. Huxley, F.R.S.

SATURDAY, MAY 27.

ROYAL SCHOOL OF MINES, at 8.—Geology: Dr. Cobbold.

ROYAL INSTITUTION, at 3.—On the Instruments Used in Modern Astronomy: J. N. Lockyer, F.R.S.

MONDAY, MAY 29.

ANTHROPOLOGICAL INSTITUTE, at 8.—On the Quissama Tribe of Angola: F. G. H. Price.—On the Races of Patagonia: Capt. Musters.—On Chinese Burials: Dr. Eatwell.

TUESDAY, MAY 30.

ROYAL INSTITUTION, at 3.—On the Principle of Least Action in Nature: Rev. Prof. Haughton.

WEDNESDAY, MAY 31.

SOCIETY OF ARTS, at 8.—On the Employment of Women: Mrs. Grey.

THURSDAY, JUNE 1.

LINNEAN SOCIETY, at 3.

CHEMICAL SOCIETY, at 8.—On Ozone: Dr. Debus, F.R.S.

ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall, F.R.S.

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ERRATA.—Vol. IV. p. 40, in Table of Contents, for "Lieut. S. P. Oliver, R.N." read "Lieut. S. P. Oliver, R.A."; p. 45, 2nd column, line 16, for "slow enough to exceed" read "slow enough not to exceed"; p. 47, 1st column, line 28, for "December 29" read "December 15"; same column, 2nd line of footnotes, for "1871" read "1870."